INFANCY

WHAT CAN BABIES DO?
WHAT DO BABIES UNDERSTAND?
Physiological states

- QUIET SLEEP
- ACTIVE SLEEP
- ALERT WAKEFULNESS
- ACTIVE CRYING
EARLY NEONATE REFLEXES

- **Sucking reflex/rooting reflex**
  - Infants turn their heads and begin sucking when touched lightly near lips

- **Moro’s reflex/startle response**
  - Infant reaction to a loud noise

- **Walking reflex**
  - Infant lifts leg when held upright with feet barely touching a surface

- **Grasping reflex**
  - Infant will grasp objects placed on its palms

- **Babinski reflex**
  - Infant fans toes when stroked on bottom of feet
How do we know what babies can understand or see?

- Habituation paradigm
- Monitor physiological or behavioral responses like sucking or heart rate
- Monitor how long the baby fixates his or her vision on an object.
What can babies see?

- **Visual Acuity** - at birth about 20/300
- 6 months 20/100 or better
- **Color perception** - Newborns seem to distinguish red and white; by two months full color vision is present.

http://www.pbs.org/wnet/brain/episode1/infantvision/flash.html
Visual preference

- Fantz - classic studies - bull's eye, colored discs, newsprint, and a simple face pattern.
Motor development

- cephalocaudal
- proximodistal
Fine motor

- Skills that involve small body movements.
- Require coordination of complex muscle groups.
- From grabbing
- To fingering
- To holding
Gross Motor Skills

- Lifts head
- Rolls over
- Sits propped up
- Sits alone
- Stands holding on
- Stands alone
- Walks alone
- Walks alone Well
- Walks backwards
- Walks up steps
- Kicks ball forward
Development of the Brain

- Myelination
- Exuberant synaptogenesis
- Primary motor area develops first, especially those that control the arms and the trunk.
- Frontal lobes continue to develop throughout childhood.
Synapse Formation and Dendrite Formation

- Seeing/hearing (visual cortex/auditory cortex)
- Receptive language areas/speech production (angular gyrus/Broca's area)
- Higher cognitive functions (prefrontal cortex)

Source: Adapted from Thompson & Nelson, 2001, p. 8.
Piaget and Constructivism

- Construct reality from experiences
- Two inborn intellectual functions
  - Organization
  - Adaptation
    - Assimilation: use existing schemes
    - Accommodation: modify schemes –
    - In class example of the term “schemes” (schema)
- Cognitive disequilibrium stimulates growth
<table>
<thead>
<tr>
<th>State of Equilibrium</th>
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<tbody>
<tr>
<td>Current understanding of the world (internal data) is consistent with external data.</td>
<td>Small furry animals with fluffy tails are called cats. They meow and smell nice.</td>
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<td>Along comes a new piece of information that doesn’t fit with current understanding of the world, leading to disequilibrium—an uncomfortable state of mind that the child seeks to resolve.</td>
<td>Thats strange—this small furry creature has a fluffy tail but it doesn’t meow and it certainly doesn’t smell nice!</td>
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<td>This unbalanced (confused) state can be resolved through the processes of organization and adaptation (assimilation and accommodation).</td>
<td>This can’t be a cat. Mommy called it a skunk, which must be a different kind of animal.</td>
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<td>These lead to a new way of understanding the world—a new state of equilibrium.</td>
<td>I’ll have to remember that skunks and cats are different types of animals.</td>
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Cognitive Developmental Milestones

- Piaget's model
- 0-2 Sensorimotor period
- Key achievement is object permanence: recognition that object or person continues to exist when out of sight
(a) Infant sees apple

(b) Researcher hides apple as infant watches

(c) Researcher distracts infant and moves apple

(d) Infant is confused

(e) Infant searches for apple under wrong cloth
(a) Habituation

(b) Possible event

(c) Impossible event